

Examiner objected to the drawings under 37 C.F.R. § 1.83(a), for lack of the structure of Claim 4. The Examiner rejected Claim 4 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Additionally, the Examiner rejected Claims 4, 7, and 9-11 under 35 U.S.C. § 112, fourth paragraph, as failing to further structurally limit a preceding claim. The Examiner also rejected Claims 1-11, 13, and 14 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner rejected Claims 1-11 under 35 U.S.C. § 102(e) as being anticipated by Pritchard et al. (U.S. Patent Number 6,381,964). The Examiner rejected Claims 1-14 under 35 U.S.C. § 102(b) as being anticipated by Richardson (U.S. Patent Number 5,862,668). The Examiner further rejected Claims 1-14 under 35 U.S.C. § 102(e) as being anticipated by Mongia (U.S. Patent Number 6,367,262). The Examiner rejected Claims 13 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Richardson in view of Crocker (U.S. Patent Number 6,272,840).

Restriction

Applicant affirms the provisional election to proceed with the subject matter of Claims 1-11 and has therefore cancelled the subject matter of Claims 12-14. Applicant reserves the right to pursue the subject matter of Claims 12-14 in a continuing application, divisional application, request for continued examination and any other future patent applications.

Drawings

Applicant submits that the cancellation of Claims 1-14 makes the objection to the drawings moot.

The Examiner rejected Claims 1-14 under statutory requirements and Applicant has canceled Claims 1-14. The cancellation of Claims 1-14 has not been made to avoid statutory requirements. Instead, new claims have been added, to replace Claims 1-14, to more clearly describe the invention, to particularly point out and distinctly claim the subject matter of the Applicant's invention, to further structurally limit any preceding claims, and to indicate novelty and unobviousness. Applicant submits that the cancellation of Claims 1-14 makes these rejections moot.

New Claims 18, 28, and 34 find support in the originally filed Application at page 5, paragraph 0023, lines 19-22 ("The present invention is comprised of one fuel injection body to supply both pilot and main fuel systems. The fuel injection body is further comprised of a pilot fuel circuit and a main fuel circuit, both of which inject fuel at essentially the same axial and radial location.") and in the originally submitted Claim 4 ("The gas turbine engine fuel injection and combustor system of claim 1, whereby pilot circuit fuel and main circuit fuel are injected in the combustion chamber at essentially the same axial and radial locations."). This feature is shown in Figures 1 and 4, where pilot fuel injector nozzle 21 injects pilot fuel 25 in essentially the same axial and radial location as the main fuel injector nozzle 32 injects main fuel 34. New Claims 24, 33, and 42 use the term, "aviation fuel," which is a synonym for the term, "aerospace type fuels," found in originally submitted Claim 10 ("The gas turbine engine fuel injection and combustor system of claim 1, whereby aerospace type fuels can be utilized can be utilized as the combustion medium.").

35 U.S.C. § 102(e)

The Examiner stated that this application should be examined under 35 U.S.C. § 102(e) prior to the amendment by the American Inventors Protection Act of 1999 (AIPA) as the application was not filed on or after November 29, 2000, or voluntarily published under 35 U.S.C. § 122(b). Applicant respectfully counters that this application should be examined under the post-AIPA 35 U.S.C. § 102(e), as this application was filed on May 2, 2001.

Pritchard et al. (U.S. Patent Number 6,381,964)

Pritchard discloses a multiple annular combustion chamber swirler containing a pilot swirler (column 3, line 7), and a main swirler (column 4, line 10), operated at low power settings (column 3, line 10), and high power settings (column 4, line 15). During starting and low power conditions, only the pilot mixer is fueled, and the main mixer is fueled under high power conditions (column 4, lines 54-58).

Pritchard does not disclose the subject matter of new independent Claim 15, being *inter alia*, comprised of a plurality of circumferentially disposed dome cooling nozzles (new Claim 15, at line 14). Significantly, Pritchard does not disclose multiple dome cooling nozzles, while FIG. 1 demonstrates this feature clearly with label 19. The prior art lacks any disclosure or suggestion of circumferentially disposed dome cooling nozzles. Indeed, Pritchard make no mention or suggestion of using any type of cooling nozzle or alternate cooling scheme. The subject matter of Claim 15 is not new matter, as it finds support in originally submitted specification Paragraph [0031] at page 7, lines 11-12, and FIG. 1. Thus, Pritchard does not anticipate new independent Claim 15, and corresponding dependent new Claims 16-24.

Also, Pritchard does not disclose the subject matter of new Claim 25. For example, Claim 25 relates that "the combined geometry of the pilot circuit

and main circuit fuel injection systems provides a combined volume that is less than the volume of the combustion chamber." (new Claim 25, at lines 14-16). This portion of new Claim 25 finds support in originally submitted Claim 7, where "the combined geometry of the pilot circuit and main circuit fuel injection systems provides short fuel-air residence times prior to entering the combustion chamber." Residence time for a vessel is a function of vessel volume. Thus, the subject matter of Claim 25 is not new matter, being inherently described in Claim 7 as "residence time." Consequently, new Claim 25, and the corresponding dependent new Claims 26-33, are not anticipated by Pritchard.

Additionally, Pritchard does not disclose the subject matter of new Claim 34, wherein, for example, "said pilot circuit fuel and said main circuit fuel injectors are located in the combustion chamber at essentially the same axial and radial locations." (new Claim 34, at lines 14-16). Instead, Pritchard teaches away from this feature, "As will be understood by those skilled in the art, using two rows of fuel injector ports at different axial locations along the main mixer cavity provides for good circumferential fuel-air mixing. Further, the different axial locations of the rows may be selected to prevent combustion instability." (column 3, lines 48). Thus, as Pritchard does not disclose fuel injectors located at essentially the same axial and radial locations, Pritchard does not anticipate Claim 34 or the corresponding new dependent Claims 35-42.

Richardson (U.S. Patent Number 5,862,668)

Richardson discloses a double annual combustor wherein the "pilot fuel injectors are operational alone" during starting and low power conditions and "both the main and pilot fuel injection modules function as premix injectors" during high power conditions (Abstract). However, Richardson does not disclose the subject matter of new Claim 15. For example, "a plurality of

circumferentially disposed dome cooling nozzles" is claimed in new independent Claim 15, at page 14, while such nozzles are not disclosed anywhere in Richardson. Indeed, Richardson does not mention or suggest using nozzles for cooling. New independent Claim 25 relates that "the combined geometry of the pilot circuit and main circuit fuel injection systems provides a combined volume that is less than the volume of the combustion chamber." at lines 14-16. Richardson makes no mention of a relation between the pilot injection system volume and the main injection system volume. Neither does Richardson mention or suggest a consideration of retention times. Lastly, Richardson does not disclose fuel injectors located at essentially the same axial and radial locations, as claimed in new independent Claim 34, at lines 14-16 ("wherein said pilot circuit fuel and said main circuit fuel injectors are located in the combustion chamber at essentially the same axial and radial locations."). As described above regarding Pritchard, Richardson does not anticipate new independent Claims 15, 25, and 34, or new dependent Claims 16-24, 26-33, and 35-42.

Mongia et al. (U.S. Patent Number 6,367,262)

Mongia discloses a multiple annular swirler wherein "At low power, only the pilot mixing chamber is fueled" (column 4, lines 13-14) and "At high power, fuel is injected into both mixing chambers" (column 4, lines 18-19). As described above, regarding Pritchard and Richardson, Mongia discloses using one portion at low power, then both portions at high power, but does not disclose or suggest all features of new independent Claims 15, 25, or 34. Specifically, Mongia does not disclose the subject matter of new independent Claim 15, at line 14 ("a plurality of circumferentially disposed dome cooling nozzles.") or any use of a device for cooling an annular dome. Neither does Mongia disclose a relation between the pilot injection system volume (or retention time) and the main injection system volume (or retention time), as

described in new independent Claim 25, at lines 14-16 ("the combined geometry of the pilot circuit and main circuit fuel injection systems provides a combined volume that is less than the volume of the combustion chamber."). Finally, new independent Claim 34 describes fuel injectors located at essentially the same axial and radial locations, at lines 14-16 ("wherein said pilot circuit fuel and said main circuit fuel injectors are located in the combustion chamber at essentially the same axial and radial locations.") while Mongia makes no mention or suggestion of any configuration similar to that described in new independent Claim 34. Thus, Mongia does not anticipate new independent Claims 15, 25, and 34, or new dependent Claims 16-24, 26-33, and 35-42.

Crocker et al. (U.S. Patent Number 6,272,840)

Crocker discloses a gas turbine where the pilot fuel injector is fueled during low power operation and both the pilot fuel injector and the main airblast fuel injector is fueled at higher power operating conditions (column 6, lines 38-43) unlike the present invention where the system contains "a plurality of circumferentially disposed dome cooling nozzles." (new Claim 15, at line 14), or where "the combined geometry of the pilot circuit and main circuit fuel injection systems provides a combined volume that is less than the volume of the combustion chamber." (new Claim 25, at lines 14-16), or a system "wherein said pilot circuit fuel and said main circuit fuel injectors are located in the combustion chamber at essentially the same axial and radial locations." (new Claim 34, at lines 14-16. Neither Richardson, Crocker, or the combination of the two references disclose, suggest, or motivate the invention of the subject matter of new Claims 15-42, as described previously. Consequently, Crocker, alone or in combination, does not anticipate or demonstrate obviousness in new Claims 15-42.

CONCLUSION

Reconsideration and withdrawal of the Office Action with respect to Claim 1-14 is requested. Applicant requests allowance of new Claims 15-42.

In the event the examiner wishes to discuss any aspect of this response, please contact the attorney at the telephone number identified below.

Respectfully submitted,

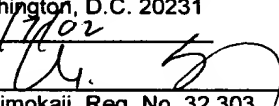
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